

Date: Fri, 19 Nov 93 04:30:31 PST  
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>  
Errors-To: Ham-Ant-Errors@UCSD.Edu  
Reply-To: Ham-Ant@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Ant Digest V93 #115  
To: Ham-Ant

Ham-Ant Digest

Fri, 19 Nov 93

Volume 93 : Issue 115

Today's Topics:

ARRL Handbook - HELP!  
Compact Quad  
Discones & Polarization  
Helical antenna (3 msgs)  
Inverted V.  
Tower Guy Anchors  
Wobulators and Goniometers (2 msgs)

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>

Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>

Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: 17 Nov 93 16:52:07 GMT

From: ogicse!emory!darwin.sura.net!fconvx.ncifcrf.gov!fcs260c!  
mack@network.ucsd.edu  
Subject: ARRL Handbook - HELP!  
To: ham-ant@ucsd.edu

In article <2cdevo\$6lj@hp-col.col.hp.com> jms@col.hp.com (Mike Stansberry) writes:  
>RYAN EGELAND (r\_egeland@cc.colorado.edu) wrote:

> I'm new to the HAM world, and haven't even bought the ARRL handbook. I've  
> heard that this book is definately the best resource for a beginning ham to  
> find out about making antennas and matching them with frequencies. I have a  
> good physics / math / electronics background, but would just like to find out  
> about what HAM radio is all about! Could anyone give me the source for the  
> ARRL handbook - I've heard it's around \$20, but my Library doesn't have it.  
> Thanks in advance,  
>

>: Ryan Egeland  
>  
>Since you're in Colorado Springs, try Centennial Electronics on E. Bijou,  
>just across the street From Montgomery Wards.  
>  
>Mike, K0TER  
>  
I'd suggest the RSBG books, they're more for the technically minded.  
Joe NA3T mack@ncifcrf.gov

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Date: Thu, 18 Nov 1993 08:13:45 GMT  
From: elroy.jpl.nasa.gov!swrinde!cs.utexas.edu!utnut!nott!cunews!  
freenet.carleton.ca!Freenet.carleton.ca!aj467@decwrl.dec.com  
Subject: Compact Quad  
To: ham-ant@ucsd.edu

I am thinking of building a two element 40 mtr quad.  
I have a space limitation though and am wondering if I can reduce the height  
to about 20 feet by wrapping the full wave loops twice around the frame,  
instead of just once. ie two turns @ 19 ft per side for the reflector and  
two turns of the driven element @ 17 - 18 ft per side for the totals of  
152ft for reflector and 140 ft for driven element. How would this affect  
the F/B and Gain figures?

--  
Bill VE3NJW Advanced Amateur  
Packet Address : VE3NJW@VE3KYT.#EON.ON.CAN  
Freenet Address: aj467@Freenet.Carleton.ca

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Date: 12 Nov 1993 13:27:29 -0800  
From: overload.lbl.gov!agate!howland.reston.ans.net!europa.eng.gtefsd.com!  
avdms8.msfc.nasa.gov!sol.ctr.columbia.edu!news.kei.com!ssd.intel.com!chnews!  
ornews.intel.com!ornews.dog.ee.lbl.gov  
Subject: Discones & Polarization  
To: ham-ant@ucsd.edu

In article <CGEOCA.55o@hpcvsnz.cv.hp.com> tomb@lsid.hp.com (Tom Bruhns) writes:

>: > >It is my understanding that discones are circularly polarized.

>: They're verticals.

>Except, of course, for the non-vertically (e.g., horizontally) mounted ones...

Wouldn't a Conical Dipole be better in this case? Or is the bandwidth wider with the discone? Why not a vertically polarized conical dipole? It could also be used as a rain gauge.

--  
zardoz@ornews.intel.com WA7LDV

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Date: Mon, 15 Nov 93 13:17:16 CST  
From: tribune.usask.ca!canopus.cc.umanitoba.ca!mizar.cc.umanitoba.ca!bison!  
sys6626!inqmind!tmantler@decwrl.dec.com  
Subject: Helical antenna  
To: ham-ant@ucsd.edu

hello all,

I'm planning on building a helical antenna, but I need the formulas for the measurements. Also some tips on construction methods would help.

Thanx

Tony Mantler, Winnipeg

tmantler@inqmind.bison.mb.ca-  
The Inquiring Mind BBS, Winnipeg, Manitoba 204 668-8845

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Date: 17 Nov 1993 20:38:05 GMT  
From: elroy.jpl.nasa.gov!news.larc.nasa.gov!arbd0.larc.nasa.gov!  
zawodny@uunet.uu.net  
Subject: Helical antenna  
To: ham-ant@ucsd.edu

In article <H4L3cc2w165w@inqmind.bison.mb.ca> tmantler@inqmind.bison.mb.ca (Tony Mantler) writes:

>hello all,  
> I'm planning on building a helical antenna, but I need the  
>formulas for the measurements. Also some tips on construction methods  
>would help.  
>

The helical antenna is very broad banded and very forgiving so construction can be quite easy. The circumference of the helix (length of one turn) is equal to

one (free space) wavelength. The pitch of the helix (spacing between turns) can vary between 10 and 20 degrees with 14 degrees being a common value. The 14 degree pitch gives a spacing of about 1/4 wavelength between the turns. The "ground plane" for the helical antenna is usually a disk or screen with a diameter of 3/4 of a wavelength and it may or may not have a rim (making it look like a cakepan) with a height of ~.1 wavelength. The trick part in construction come when doing the impedance matching. Most of the ones I have built and seen utilize a length of sheet copper soldered to the last eight of a turn on the helix which is then bent to vary the spacing from the ground plane until the desired impedance is obtained. Adding turns to the helix generally decreases beamwidth and increases gain, but only up to a point. When the number of turns gets well above 10 or so, the theoretical beamwidth gets very narrow and the alignment of the turns becomes the limiting factor in the antenna performance.

Have fun,

--

Joseph M. Zawodny (K04LW)  
Internet: [zawodny@arbd0.larc.nasa.gov](mailto:zawodny@arbd0.larc.nasa.gov)  
Packet: [ko4lw@n4hog.va.us](mailto:ko4lw@n4hog.va.us)

NASA Langley Research Center  
MS-475, Hampton VA, 23681-0001

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Date: 17 Nov 93 16:50:14 GMT

From: ogicse!emory!darwin.sura.net!fconvx.ncifcrf.gov!fcs260c!  
[mack@network.ucsd.edu](mailto:mack@network.ucsd.edu)  
Subject: Helical antenna  
To: ham-ant@ucsd.edu

In article <H4L3cc2w165w@inqmind.bison.mb.ca> [tmantler@inqmind.bison.mb.ca](mailto:tmantler@inqmind.bison.mb.ca) (Tony Mantler) writes:

>hello all,  
> I'm planning on building a helical antenna, but I need the  
>formulas for the measurements. Also some tips on construction methods  
>would help.

>  
>Thanx

> Tony Mantler, Winnipeg  
>

>[tmantler@inqmind.bison.mb.ca](mailto:tmantler@inqmind.bison.mb.ca)-

>The Inquiring Mind BBS, Winnipeg, Manitoba 204 668-8845  
The formulae etc are in most antenna handbooks (try the RSGB first, and  
the ARRL if you can't find the RSGB). There are also programs (one  
called helix I believe that are on BBS's, I'll find it if you e-mail me)  
to save you looking up tables.

There are two main things to know - the bandwidth which is about  
2:1 for short helices drops as they get longer - still the bandwidth

is enormous compared to any ham band even for long helices. The other is that the impedance is 140ohms which doesn't match anything. You can use a quarter wave transformer, which is narrow band, or put 4 of them together (if you're at UHF or above) or there's a trick using the last 1/4 wave of the helix as a transformer (in RSGB book). Helices tend to be eliptically rather than circularly polarised unless you taper the turns at the furthest end so that sprial in to the axis.

Joseph Mack

Joe NA3T

mack@ncifcrf.gov

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Date: 16 Nov 1993 23:01:24 GMT

From: elroy.jpl.nasa.gov!usc!cs.utexas.edu!asuvax!ncar!noao!CS.Arizona.EDU!  
organpipe.uug.arizona.edu!helium!hlester@decwrl.dec.com

Subject: Inverted V.

To: ham-ant@ucsd.edu

Kenneth Opskar <kenneth@stud.unit.no> wrote:

>I'm planning to set up an inverted V, and have heard that the apex angle is  
>critical. It seems to me that i can't manage more than 80-85 degrees, at least if  
>the apex angle shall be 0.2 the wavelength above ground. I can manage 110-120  
>degrees, but then the feed point will not be more than 27 feet above ground.  
>I also have heard that the end insulators mustn't get to close to lossy ground.  
>

>At last, the antenna will be surrounded by walls, like streching the feed line  
>up the corner of a house, and streching the two wires along the walls.

The proximity to the walls/houses may have the most (negative) effect on the performance of your antenna, less so the height of the apex and the closeness to ground of the ends. An inverted V "must not" be of an angle less than 90 degrees; I recall 127 degrees is ideal for a 50 ohm match, but I do not think this is awfully critical. I'd recommend the 110-120 degree angle setup, not the 80-85. Make the antenna legs longer than they "should" be so that you'll have some wire to cut off for possible pruning. Thus, two variables are present for matching: pruning the antenna leg lengths (by equal amounts), and varying the apex angle.

Howard KE7QJ

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Date: Tue, 16 Nov 1993 16:19:45 GMT

From: library.ucla.edu!europa.eng.gtefsd.com!howland.reston.ans.net!  
vixen.cso.uiuc.edu!sdd.hp.com!col.hp.com!fc.hp.com!jayk@network.ucsd.edu

Subject: Tower Guy Anchors

To: ham-ant@ucsd.edu

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:

: If you can get access to a cable tension gauge, set the guy tension to  
: 50-75 pounds depending on temperature, the tower will "grow" in warm  
: weather so use the higher tension setting then. The guys will loosen in  
: cold weather as the tower shrinks.  
: Gary

The Rohn catalog says to tension the guys to 10 percent of their rated value (when using the proper size guys they recommend for various towers). I'm no expert on why, but that's what it says.

73, Jay KOGU jayk@fc.hp.com

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Date: Mon, 15 Nov 1993 16:06:06 GMT  
From: unogate!news.service.uci.edu!usc!howland.reston.ans.net!  
europia.eng.gtefsd.com!gatech!swrinde!cs.utexas.edu!csc.ti.com!tilde.csc.ti.com!  
cauldron!ra.csc.ti.com!fstop.csc@mvb.saic.com  
Subject: Wobulators and Goniometers  
To: ham-ant@ucsd.edu

Regarding goniometers, I remember something from my days in field service on instrument landing systems. Some one of the other normal pieces of airport electronics, the VHF OmniRange (VOR), I think, used something the guys that worked on it called a goniometer as an antenna. The basic idea was that a properly phased signal or set of signals applied to this device would cause an RF beam to sweep through 360 degrees in some specified interval after a omnidirectional burst occurred. By measuring the interval between the arrival of the omni burst and the sweep, one could determine their position relative to the station transmitting the signals. This would seem to fit with Tom's "device to measure angles" definition.

I could be all wet on this. It has been nearly 20 years since I worked in that field and I have slept since then.

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\*\*\*\*\*  
| Steve Brown, WD5HCY |  
sbrown@charon.dseg.ti.com	Simplicate
wd5hcy@wd5hcy.ampr.org	and add
[44.28.0.61]	lightness.
wd5hcy@kf5mg.#dfw.tx.usa.na	
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Date: 16 Nov 1993 13:06:32 GMT  
From: olivea!inews.intel.com!ilx018-bb.intel.com!ilx049!dbraun@uunet.uu.net  
Subject: Wobulators and Goniometers  
To: ham-ant@ucsd.edu

In article <CGJKvF.LGn@hpcvsnz.cv.hp.com>, tomb@lsid.hp.com (Tom Bruhns) writes:  
|  
|  
|> "Wobulator" (or wobbulator) wasn't in the unabridged Webster's I used ;-)

Well, MY Webster's (the really gigantic Merriam-Webster one) does have "wobulator". I was amazed.

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Doug Braun      Intel Israel, Ltd.      M/S: IDC1-41  
Tel: 011-972-4-655069      dbraun@inside.intel.com

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Date: 12 Nov 1993 13:14:51 -0800  
From: overload.lbl.gov!agate!usenet.ins.cwru.edu!magnus.acs.ohio-state.edu!  
math.ohio-state.edu!sol.ctr.columbia.edu!news.kei.com!ssd.intel.com!chnews!  
ornews.intel.com!ornews.@@dog.ee.lbl.gov  
To: ham-ant@ucsd.edu

References <CGBwHx.857@hpqmoea.sqf.hp.com>, <2bttse\$ol@ornews.intel.com>,  
<CGCIvM.5z1@cup.hp.com>s.  
Subject : Wobulators and Goniometers

In article <CGCIvM.5z1@cup.hp.com> jholly@cup.hp.com (Jim Hollenback) writes:  
>Jim Garver (zardoz@ornews.intel.com) wrote:  
>: Sacrilegious plastic 450 ohm line. I was unable to find a real wobulator  
>: of suitable size, only those dinky ones found in ARC-5 transmitters.  
>  
>I know what an ARC-5 transmitter looks like, but pray tell, what is  
>a wobulator?

I may be full of it, but I believe its a sorta link-coupled transformer where the secondary winding is mounted inside the primary on a shaft attached to a knob. Turning the knob will vary the transformer coupling by twisting the secondary windings turns with respect to the primary windings. Its commonly used on shipboard transmitting equipment among other places. There its usually housed in a separate box but may be integrated into the transmitter as in the ARC-5. Why its called a wobulator I don't know execpt to guess its because the secondary wobbles inside the primary. Why is a goniometer called a goniometer?

What is a goniometer? A weird antenna gizmo with crossed windings used for direction finding.

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zardoz@ornews.intel.com WA7LDV

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End of Ham-Ant Digest V93 #115

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